A

Project Report on
Digital Attendance
SUBMITTED BY:

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A 5thSemester project report for Mini Project Lab – MCA506P, submitted in Partial fulfilment of the requirements for the award of Degree in

MASTER OF COMPUTER APPLICATIONS

Under the guidance of

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CERTIFICATE

This is to certify that **Rahul Sharma and Sudeep Khatri** bearing University Registration No:**18SKSAC004 and 18SKSAC006** has satisfactorily completed the Fifth Semester MCA Mini Project (MCA506P) titled "**Digital Attendance**". This report is submitted in partial fulfillment of the requirements for the award of the Degree in Master of Computer Applications (MCA) as prescribed by Bangalore University, Academic Year 2020-21.

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DECLARATION

I hereby declare that the 5th semester Project work entitled **"Digital Attendance"** submitted to the Bangalore University, is a record of an original work done by me under the guidance of internal guide, **Tanmoy Ghosh, Assistant Professor,** AIMS Institutes, Bangalore. The matter embodied in this project has not been submitted earlier for the award of any degree or diploma in any institution or universities to the best of my knowledge.

I hereby declare that the above provided information is true and complete to the best of my knowledge and belief.

DATE: Sudeep Khatri

PLACE: Bangalore

ACKNOWLEDGEMENT

I take this opportunity to pass on my deep sense of gratitude to my Institution, AIMS Institute of Higher Education, Peenya, Bangalore, and the Department of MCA – IT, which has given me the opportunity and exposure to the extensive knowledge, thereby enabling me to attain my goal of becoming a worthy student.

I am thankful to **Dr. Kiran G Reddy, Principal**, AIMS, for her kind support and encouragement to carry out the project work in the Institution.

I avail this opportunity to acknowledge my indebtedness and sincere gratitude to **Prof.Vivek K** for guiding and supporting in completing the project.

I also like to thank all the faculty members, my friends and last but not the least, my parents for their support during the course of my project.

Place: Bangalore

Date:

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CHAPTER 1

INTRODUCTION

CHAPTER 1

INTRODUCTION

This chapter discusses about the background, problem statement, goal and objective, proposed solution, proposed approach and project scope.

The popularity of smartphone has increases over the year. This could change and speed up the attendance taking process in education system. At the current scenario the attendance system is time consuming and required manual workload. Teachers will let the students to sign on attendance list. Then, he or she will save the attendance in to the university's portal to record the attendance for every class. This will consume teachers' valuable time. Also, it may occur some human error during the transferring from paper attendance to digitalized attendance records. Besides, students can easily cheat on attendance by asking favors from their friends, to sign on the attendance sheet on their behalf. This is hard to avoid when the attendance sheets were given to students. The proposed solution is based on QR code to record students' attendance. The system will able to verify students' identity and prevent false attendance. All of the attendance records will be recorded to the system and available to students and teachers instantly. This will eventually reduce the teacher's efforts on attendance registration.

Goal: - Reduce administrative and teacher's workload manually and minimize paper usage. Where teacher's and administrative don't have to record the data manually or physically. The entire data will be maintained by the application. The data will be stored in the server from where all the authority will be able to fetch the records of the attendance. Even it will help to calculate the attendance of the student and can easily check their eligibility of the student.

Objectives: -

a. **QR Code Automata: -** To simplified current attendance taking process by automating the process using QR Code scanning. Whenever teacher's want to take the class, simply they have to login to the application and generate the QR Code by clicking on the generate button. After Clicking on the generate button the QR Code will be generated and then the teacher can display the QR Code to the student. One Student can scan only one QR Code at a time for that class. Once a student scans a QR Code, then that QR Code will be not valid for other students, the new QR Code will be generated automatically before Next async type .

b. **Transparency: -** Increase the transparency of attendance records by enabling students and teachers to view attendance records anytime. This application also helps the student to view their attendance anytime they didn't have to visit to the teacher's or to the administrative to check their attendance. Not only students, Teacher's and Administrative can also see the attendance of the students from this application. They don't have to go through the Register Books and calculate the attendance.

c. **Mislead of Attendance: -** Student cannot mislead the teachers by fake attendance. While registration they have to use their own mobile phone to get registered into the application. Application will trace the mobile information. So, whenever student want to scan the QR Code they have to use their own handsets to scan the QR Code. So, this application helps the teachers to have a fair attendance of the class. Earlier they use to take a sign of the student in a paper or in the register book for the attendance, at that time student can easily mislead the teacher by doing favor of his/her friend by signing their signature in the record books. So, it will be difficult to identify the count of the student in the class as the class size is big and it will be much more time consuming.

d. **Sustainability:** - This application will help the administrative and teachers to reduce the paper usage. The whole attendance will be stored in the server which help the user to reduce the paper work. The workload will be minimizing for the teachers and administrative. They don't have to do physical work to record the attendance of the student and they don't have to calculate the attendance.

Project Scope: -

The section below explains the target users, platform and modules of the project.

- **Target Users**
  - **Students**
    - **Record Attendance: -** Student can put their attendance through this application. They just have to login and select the subject for which they want to take their attendance.
    - **Analysis: -** They can analysis their attendance by simply login to the application and select the attendance details for a particular subject. By clicking on to the Attendance details Tap they can see their attendance as on date. So, from that they can easily identify their attendance of a particular Subjects

  - **Teachers**
    - To show the QR Code to students during class.
    - View and manage student's attendance records.
    - Analysis

- **Platform: -** The system consists 2 platforms, web application and mobile platform.
- **Web server**

1.7.3 Modules: -

The section below explains modules in mobile, web application and backend service.

1.7.3.1 Mobile platform ~~Module~~: -

- Record attendance by scanning QR Code.
- Student will use mobile platform
- View attendance records.
- Student can login/register themselves.

1.7.3.2 Web Module: -

- Teachers can view, add, modify the classes.
- Teachers can view overall attendance records in table.
- Teachers can export DB from one DB to another DB.
- Teachers can display QR Code for each class.
- Web Server: -

1.7.3.3 Backend service Module: -

- Prevent unauthorized registration of attendance with multi-factor authentication.
- Provides login authentication on mobile.
- Generate valid code for QR code.
- Can export Mongo DB to MYSQL.

CHAPTER 2

Problem Definition

2.1 Problem Statement: -

The process of taking students' attendance in higher education in time consuming and inefficient. The process become harder to manage when the class size is big. Prevention cheating on attendance is even harder to control. After each class, teachers have to record the attendance to related register books according to the attendance sheets. The whole attendance taking process is consuming the valuable time of teachers. With all the problem mentioned above, universities are not changing the way they record attendance. The proposed solution proposes QR code for students to scan with their smartphone. The attendance will be confirmed with the identity from the smartphone. This will save time and effort to record attendance at the same time, reduce unwanted paper usage. The proposed solution identifies unauthorized attendance registration using multi-factor authentication.

2.2 Proposed Solution: - The proposed solution is by taking attendance using QR Code.

The reason of using QR Code is because it provides low initial cost for implementing the system. By using the tools that everyone student has, smartphone to take attendance. The solution has 3 modules,

mobile module, web module and backend service module.

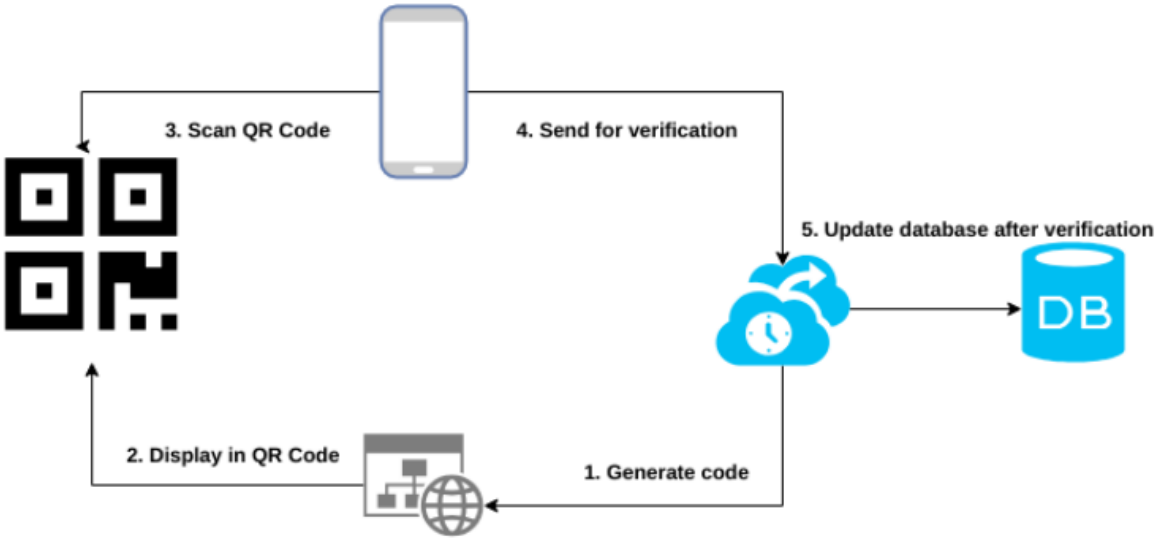


Figure 2.2: The Proposed Solution Overview

Students can view their attendance records for enrolled subjects, this can increase the transparency of attendance system. The system also issue notification if the attendance percentage is below than certain level. Moreover, teachers also can manage students records with web module. Teachers can manage class as well. New class can be created in case there is any class replacement. Existing classes can be modified or deleted by teachers. Administrators can manage users with web module. They can add new teachers or students, update their details and delete existing users.

2.3 Proposed Approach: -

The proposed methodology is Evolutionary Prototyping Methodology.

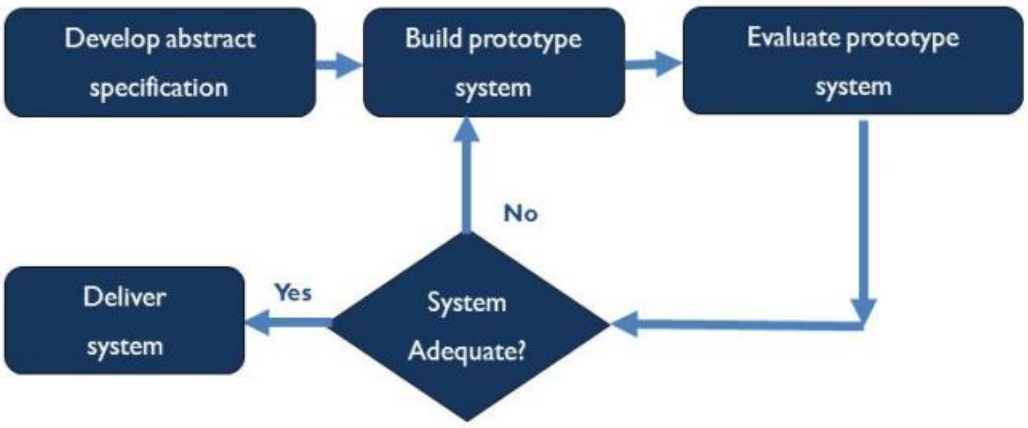


Figure 2.3: The Proposed Solution Overview

Prototype model involves users in the development stage. This can have clearer understanding of requirements based on users' feedback. Errors can be detected in the early stage; missing module can

be identified easily. An attendance system should be reliable and easy to use. Thus, it is good to involve users in the development stage.

CHAPTER 3

The Learning System

3.1 Target Users

i. Students
   - To records their attendance for every class.

ii. Teachers
   - To show the QR Code to students during class. o View and manage student's attendance records.

iii. Administrator staffs
   - Manage timetable, classes and users (students and lecturers).

3.1.2 Platform: -

The system consists 2 platforms, web and mobile platform. Web is for lecturers. Students can be accessing from mobile platform.

3.2 Representation: -

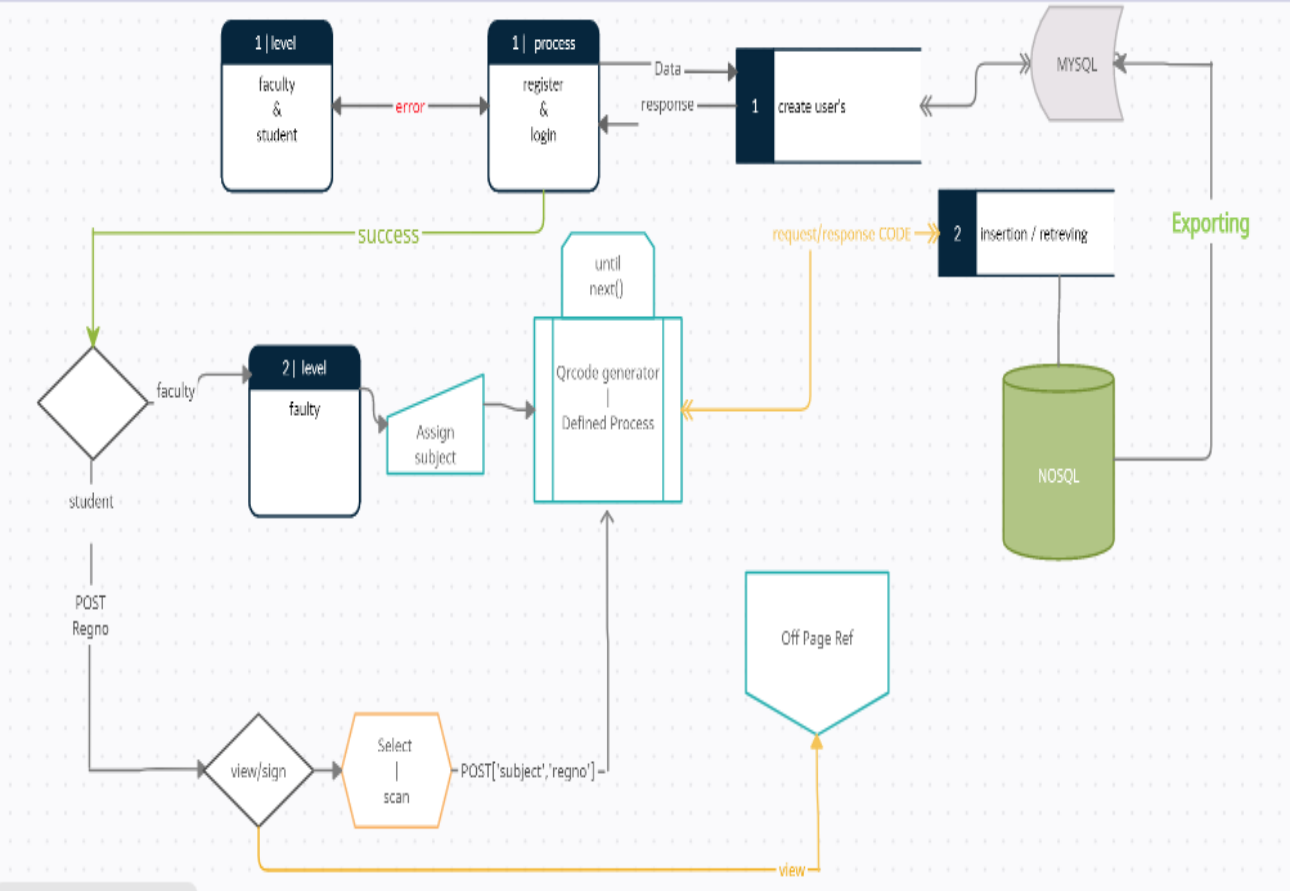


Figure 3.2: Representation of Model

CHAPTER 4

Experimental Evaluation/Test/Results

This chapter discuss about Database Design, Software Modelling and Process Modelling

4.1 Data Sets: -

```
    var subjects = [

{"BCA" : "1", "code":"DBMS",    "name":"Database mangement system"},
{"BCA" : "1", "code":"DC",      "name":"Discret Math"},
{"BCA" : "1", "code":"DCC",      "name":"Data communication Network"},
{"MCA" : "1", "code":"DBMSLab", "name":"Database Lab"},

{"MCA" : "1", "code":"SE",      "name":"software engineering"},

{"MCA" :"2", "code":"QT" ,      "name":"quantiative technique"},
{"MCA":"2", "code":"QTRA",     "name":"quantiative technique Research"},
{"MCA":"2", "code":"AD",       "name":"Advance alorithim"},

{"MCA" :"3", "code":"AJ" ,     "name":"Advance JAVA"},
{"MCA" :"4", "code":"MP",      "name":"Management theme"},
{"MCA" :"4", "code":"Perl",    "name":"Perl progamming"},
{"MCA" :"5", "code":"PLAB",    "name":"Perl LAB"},
{"MCA" :"5", "code":"AI" ,     "name":"Artificial inteligence"},
{"MCA" :"5", "code":"AD" ,     "name":"Advance Databases"}
];
```

Figure 4.1.1: Database code

The diagram above shown the code to create a list for the subjects in the project.

```
INSERT INTO `attendance_tbl` (`at_id`, `regno`, `sub_code`, `issue_date`, `status`, `cno`) VALUES
(60, '18SKSAC007', 'MCA503T', '2021-03-02', 'P', 0),
(61, '18SKSAC008', 'MCA505P', '2021-03-05', 'P', 0),
(62, '18SKSAC006', 'MCA501T', '2021-03-01', 'P', 0),
(63, '18SKSAC006', 'MCA505P', '2021-03-05', 'P', 0),
(64, '18SKSAC007', 'MCA301T', '2021-03-01', 'P', 0),
(65, '18SKSAC008', 'MCA501T', '2021-03-01', 'P', 0),
(67, '18SKSAC008', 'MCA506P', '2021-03-05', 'p', 0),
(68, '18SKSAC007', 'MCA506P', '2021-03-05', 'p', 0),
(70, '18SKSAC006', 'MCA506P', '2021-03-05', 'p', 0),
```

Figure 4.1.2: Database code

The diagram above shown the code to insert the values in attendance table in the project.

+ Options

			userid	regno	fname	course	sem	batch_no	email	password	mobile_no
Edit	Copy	Delete	1	18SKSAC006	Sudeep	MCA	5	18	sudeep.numb@gmail.com	3yy223@@3298	9844833545
Edit	Copy	Delete	2	18SKSAC008	Nitish Verma	MCA	5	18	nv.fcb10@gmail.com	#$@#@_$#@32$33	7478040006
Edit	Copy	Delete	3	18SKSAC007	Ghanshyam	MCA	5	18	boharag124@gmail.com	sg@_ah2$skddLL$	9864884648
Edit	Copy	Delete	4	18SKSAC004	Rahul sharma	MCA	5	18	rahul.sharma0662@gmail.com	sl@skj$&jio$_1	9051880692

Figure 4.1.3: Local Host Database

The diagram above shown the details of the student they entered while registration.

+ Options

			dd_id	model_no	date_create	status	d_type
Edit	Copy	Delete	1	Android 6.0.1; Redmi 3S	2020-11-29	active	phone
Edit	Copy	Delete	2	Android 6.0.1; Redmi 3s	2021-01-31	active	phone
Edit	Copy	Delete	3	Android 6.0.1; Redmi 3s	2021-01-31	active	phone
Edit	Copy	Delete	4	Android 11; M2007J3SP)	2021-03-22	active	phone

Figure 4.1.4: Local Host Database

The diagram above shown the details of the device they use for registration.

+ Options

			at_id	regno	sub_code	issue_date	status	cno
Edit	Copy	Delete	60	18SKSAC007	MCA503T	2021-03-02	P	0
Edit	Copy	Delete	61	18SKSAC008	MCA505P	2021-03-05	P	0
Edit	Copy	Delete	62	18SKSAC006	MCA501T	2021-03-01	P	0
Edit	Copy	Delete	63	18SKSAC006	MCA505P	2021-03-05	P	0
Edit	Copy	Delete	64	18SKSAC007	MCA301T	2021-03-01	P	0
Edit	Copy	Delete	65	18SKSAC008	MCA501T	2021-03-01	P	0
Edit	Copy	Delete	67	18SKSAC008	MCA506P	2021-03-05	p	0
Edit	Copy	Delete	68	18SKSAC007	MCA506P	2021-03-05	p	0
Edit	Copy	Delete	70	18SKSAC006	MCA506P	2021-03-05	p	0
Edit	Copy	Delete	76	18SKSAC007	MCA505P	2021-03-05	P	0
Edit	Copy	Delete	77	18SKSAC008	MCA504T	2021-03-03	P	0
Edit	Copy	Delete	78	18SKSAC007	MCA504T	2021-03-03	P	0
Edit	Copy	Delete	79	18SKSAC006	MCA502T	2021-03-02	P	0
Edit	Copy	Delete	80	18SKSAC007	MCA502T	2021-03-02	P	0
Edit	Copy	Delete	81	18SKSAC008	MCA502T	2021-03-02	P	0
Edit	Copy	Delete	82	18SKSAC008	MCA503T	2021-03-02	P	0
Edit	Copy	Delete	83	18SKSAC006	MCA503T	2021-03-02	P	0
Edit	Copy	Delete	84	18SKSAC006	MCA504T	2021-03-03	P	0
Edit	Copy	Delete	85	18SKSAC008	MCA301T	2021-03-06	p	0
Edit	Copy	Delete	86	18SKSAC007	MCA301T	2021-03-06	p	0

Figure 4.1.5: Student attendance database

4.2 Database Design: -

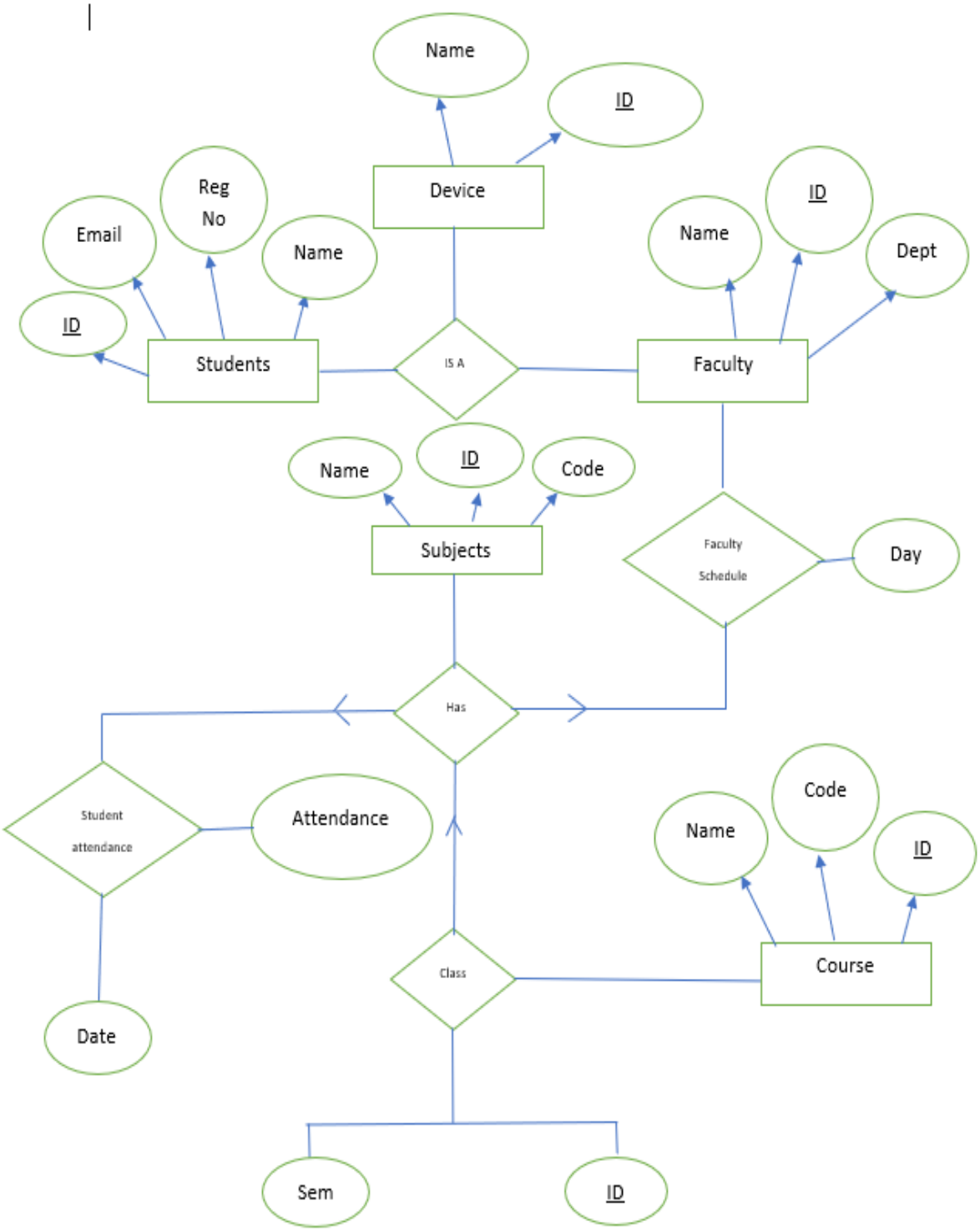


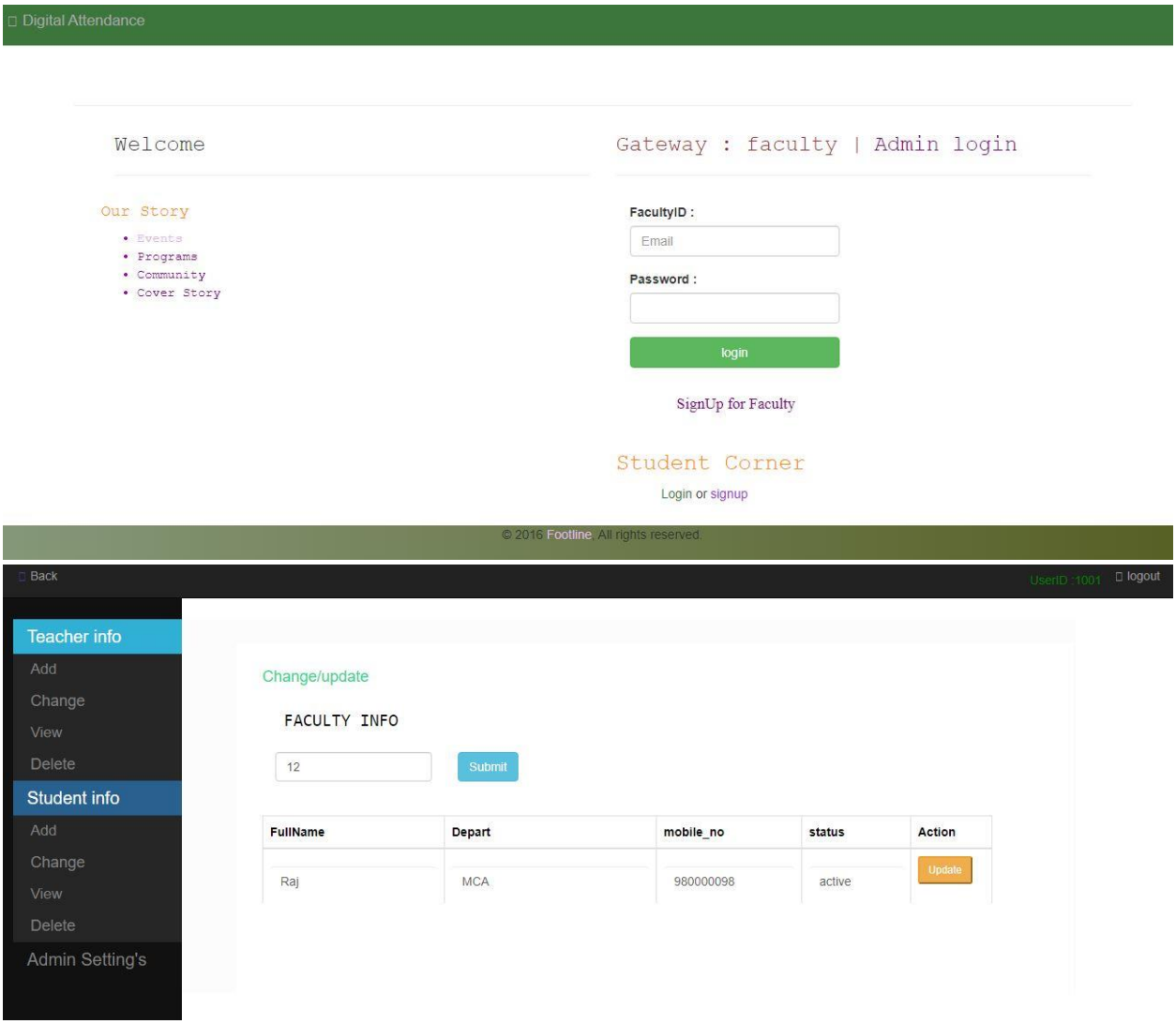
Figure 4.2: ER Diagram

4.3 User Interface: -

Web application were developed, one is for lecturer, the other is for student.

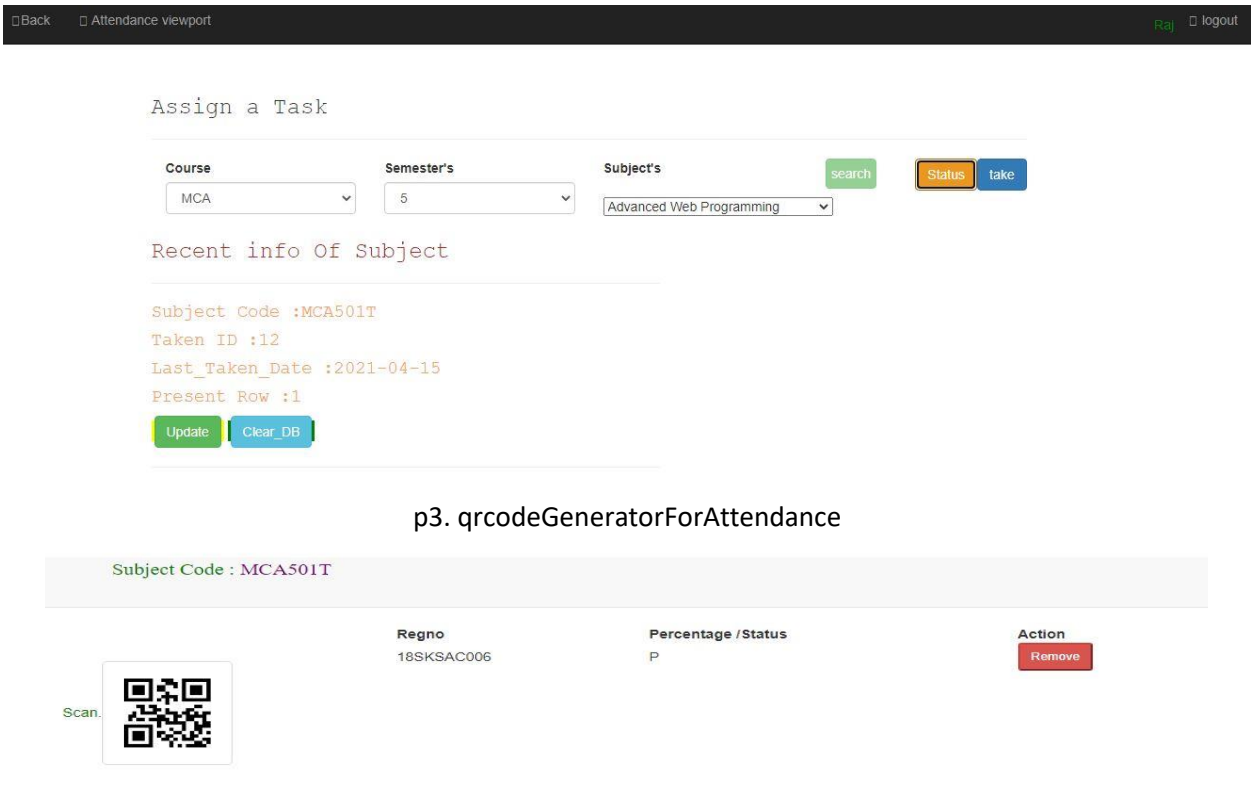
Some of UI screenshots are mention below which are taken at testing .

P1. SIndex of project

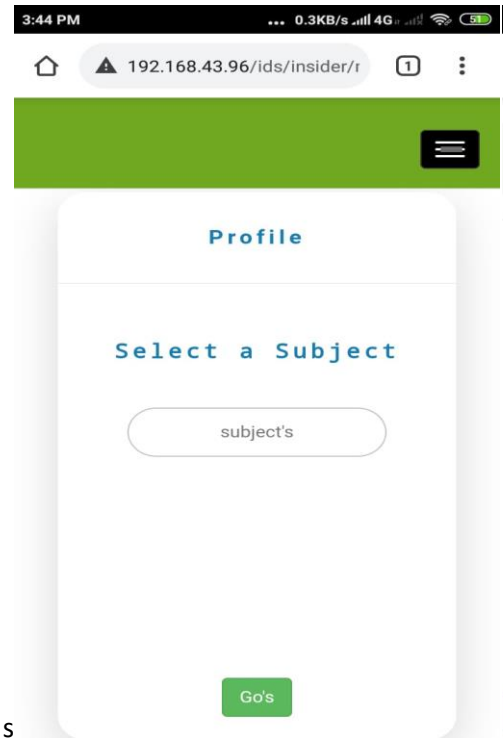


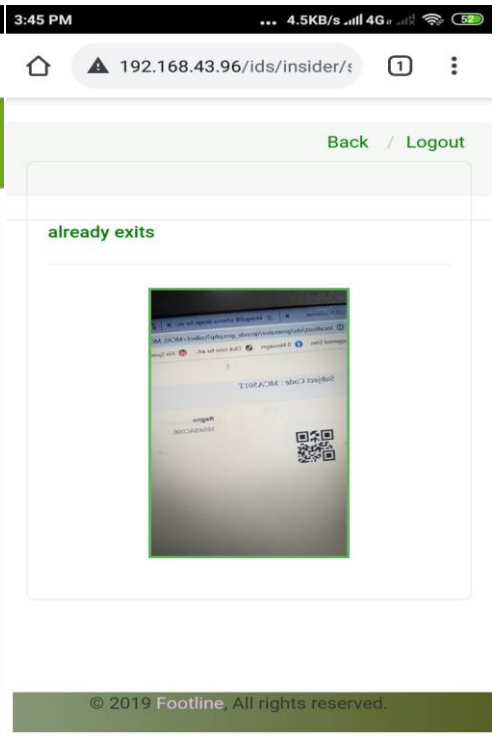
CURD operation for Both Faculty And Student.

P2. Assign Subject or Remove LastOne



p3. qrcodeGeneratorForAttendance





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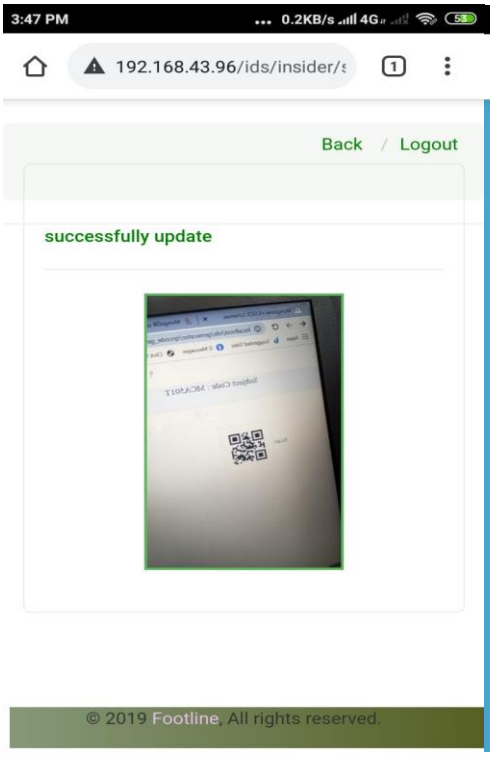
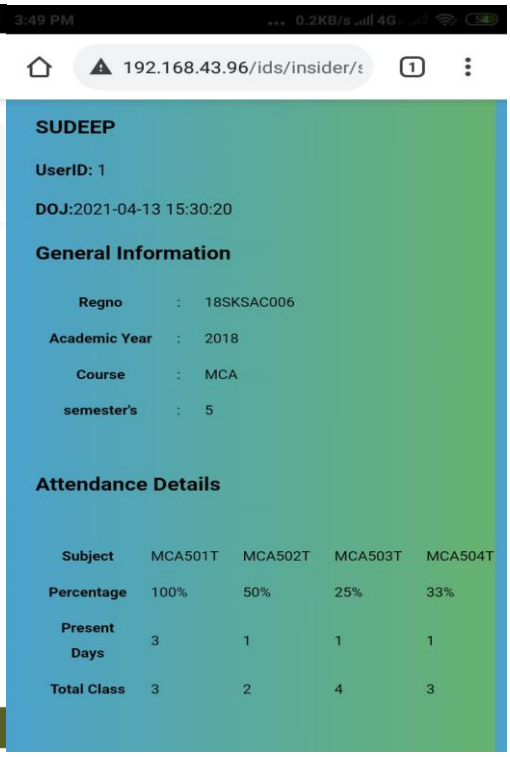
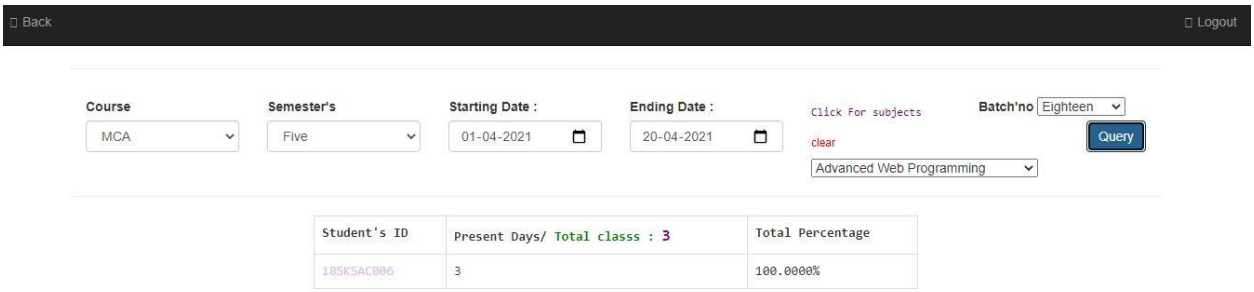


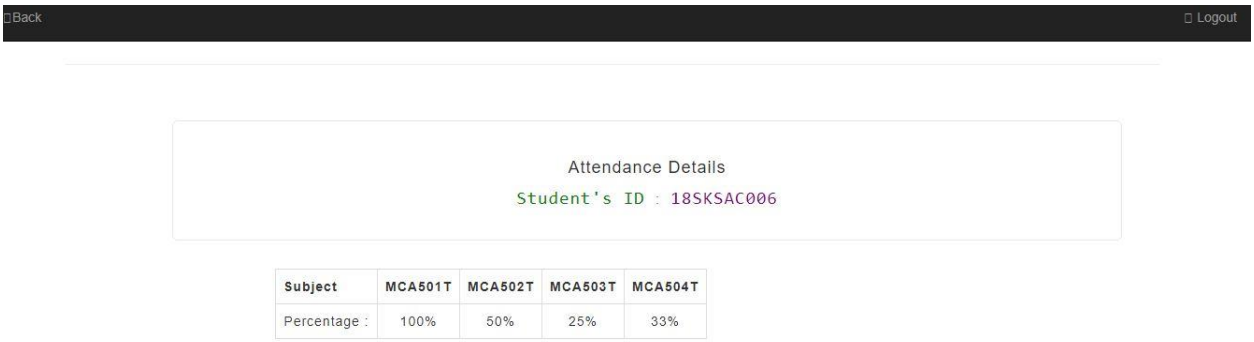


p4. Student View

P7. facultyViewForStudentAttendance



p8 . facultyViewForAllSubjectAttendacneById



CHAPTER 4

CONCLUSION AND DISCUSSION

6.1 Introduction: -

This chapter discuss about limitation of the project, future improvement and recommendation and conclusion.

6.2 Limitation: -

The project comes with few limitations as stated in the following

- No secure connection on code generator server as secure connection requires a verified domain to get an SSL license.
- • No HTTPS connection on lecturer web app as web service that the web app consume are not secure.

6.3 Improvement and Recommendation: -

There are several improvements and recommendations to be considered in the future development.

- Administrator view for manage timetable, users, and view resources consumed. •
- Develop as full-fledged progressive web app on all web apps.
- Develop in-deep data analysis feature to further analyses students' attendance records.

6.4 Challenges: -

The challenges when developing the projects are listed as follows:

- Required a lot of self-learning to pick up libraries, frameworks and cloud services.
- Less similar implementations or solutions to refer to when designing the application.

6.5 Conclusion: -

In conclusion, taking attendance with QR code is the cheapest and adaptable options among all of the solutions. It does not require infrastructure changes to adapt it. With the popularity of the smartphone and internet accessibility, it can widely use in universities. With the automatically refresh QR code, cheating on attendance is become even difficult. Besides, it eliminates a lot of lecturers' effort on managing students' attendance records. The project objectives were achieved.

6.6 Bibliography: -